



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE PERSONAL FACTOR IN MUSHROOM POISONING

JOHN DEARNESS

It is an old saying that what is one man's meat is another man's poison. Doubtless every reader has a few acquaintances whose dietetic idiosyncrasies are matter of remark among their friends. I happen to know two persons who are made ill by eating cake or other food containing egg,—never by eating eggs themselves, because neither could be bribed to taste them willingly. Not a few have to pay the penalty of total abstinence from some delicacy for having once indulged in a surfeit of it. Possibly the majority of us have discovered some generally wholesome article of diet which it is prudence on our part to avoid.

One of the theories offered to explain some of these vagaries of digestion is that many kinds of food, particularly those for which a taste has to be acquired, contain substances—call them poisons if you like—which our leucocytes have to learn to neutralize. Another theory is that in the chemical laboratory of the digestive system there are made a great variety of compounds; in exceptional cases or under exceptional circumstances, some of these may be poisonous enough to cause auto-intoxication. The imagination, too, sometimes exercises a remarkable influence upon the digestive organs. Workers in a logging camp are not apt to be squeamish. I knew of a case where one of a number of them who had just disposed very acceptably of a deep pie, on being informed of the kind of meat it contained, was immediately seized with violent *mal de mer*.

In Dr. Murrill's "Poisonous Mushrooms," MYCOLOGIA 2: 255-264, the statement recurs, in effect if not in words, "harmless to some, poisonous to others." The question naturally arises why such opposite effects as nutrition and poison from so many species of one group of plants. Inquiry into the causes may be regarded as practical in view of the fact that there are easily ten

times as many people interested in mycophagy as in scientific mycology.

By way of drawing attention to the subject, rather than of throwing light upon it, I beg to cite three types of instances of alleged mushroom poisoning which I have had the opportunity to investigate:

A. A fellow-citizen dined on a quart of common mushrooms (*Agaricus campestris*) that he had purchased at a fruit stall. Within twelve hours he was ill enough to have a physician called, who pronounced his case one of toadstool poisoning. His recovery was complete in two or three days.

B. Near a neighboring town a man collected "a basketful" of supposed mushrooms. His wife was suspicious of them, with the consequence that the collector cooked and ate them without assistance. Before morning he was "sick enough to die," but the promptitude of the doctor "saved his life."

C. A week of wet, warm weather early in May had brought up in a thinly wooded pasture an abundant crop of helvellas (*Gyromitra esculenta*). Two or three families in the neighborhood collected them for food. One of the families, on a Tuesday evening, ate about two quarts of them, the method of preparation being frying in butter. On the next day at noon a smaller quantity—about a quart and a half—was similarly disposed of. That night every member of the family was taken ill, and on Friday one of them, in spite of the efforts of two physicians, passed into a comatose condition which terminated in death. The others recovered without medical treatment.

The explanation given out in case A was that there "must have been a toadstool among the mushrooms." It is not improbable that wholesome fungi have been blamed for the faults of bad company. In this instance, however, examination of specimens from the basket out of which the quart had been taken revealed a thorough infestation of larvae. Half the quantity of as wormy mutton might have produced worse effects. The limit of edibility of a fungus is reached by the time its "worminess" shows tunnels that can be detected with the unaided eye.

In case B the offender proved to be *Lepiota naucinoides*. The victim assured me that he had admitted no other kind to his

basket; indeed, that he had been "very particular to gather only fresh, clean specimens." While I suspect that this beautiful and highly commended toadstool is slightly poisonous, I believe that had the consumer under notice made its acquaintance more gradually he might have brought himself to eat "three platefuls of it" with safety. When we consider that, properly remorseful for scouting his wife's advice, he imagined that he had eaten a potful of deadly toadstools, we cannot wonder that his overloaded stomach made him feel sick enough to die.

C. Both terms of the binomial *Helvella esculenta*, suggest eating—wholesale and wholesome. Some European mycophagists have written commendations of this fungus. Berkeley's reference to its edibility is tempered with the caution that it is unsafe for some persons, a circumstance dependent rather on a peculiarity of the person's constitution, than upon some deleterious quality of the plant. The personal equation does not seem wholly sufficient to explain the history of the cases cited under C. *Helvella esculenta*, or *Gyromitra* as it is now called, cannot be mistaken for any other species, hence the variously toxic effects referred to may all be surely ascribed to the fungus named. These did not appear, it is needless to say, and were not suspected, after the first meal. Yesterday, they seemed nutritious or at least innocuous; to-day, they are poisonous to the same persons. In view of all that I could learn, it seemed more probable that the poison developed in the collected fungi than that it was started during their digestion. For a genuinely fleshy fungus, *Gyromitra* is not readily putrescible. Specimens taken from the same ground lay on my table a week or more without any sign of change save shrinkage in volume.

The heavy sickening odor given off by *Amanita phalloides* and *A. verna* in drying is well known. In the slow relaxation by moist air in a closed vessel of well-dried specimens of *Helvella crispa*, *Boletus Clintonianus*, and *Agaricus silvicola*—three species named in the edible lists—I have observed the development of a similar odor. The odors may not have any connection with the deadly alkaloid present in the *Amanita*, but they are evidence of some similar chemical change.

Among the unstable nitrogen compounds present in some of

the fungi, I can conceive that decompositions may take place that are not evident as putrescence, resulting in poisonous compounds. Such changes might be arrested or facilitated by the conditions in the alimentary canal and become effective inversely as the vigor and rapidity of the digestive process. If there is any truth in this speculation, then it follows that a person who may have eaten without injury any of those species characterized as "harmless to some, poisonous to others" at one time, might be poisoned by the same species at another time.

In the process of disintegration, nocuous products undoubtedly do develop from innocent compounds, but, further, it is quite conceivable that the strength of poisonous principles may vary in the same species of mushroom or that even some alkaloid may be normally present in one set of conditions and be absent in another. On what other theory can one explain the experience reported by Dr. Cleghorn in the October number of *Good Housekeeping*? *Coprinus comatus* ranks very near the common meadow mushroom in general popularity, and in the literature of mycophagy it is usually spoken of with unqualified commendation, yet here is an experience in a neighborhood where the shaggy-mane was "formerly eaten with pleasure" in which ten persons in four different families were made so ill as to require medical aid. The symptoms as reported by Dr. Cleghorn are interesting enough to repeat. In some cases these appeared in a few minutes after eating, in others after several hours. They exhibited a well-marked intoxication, with failure of muscular coordination, blood-shot, dilated eyes, incoherent speech, and drowsiness, but without depression of the action of heart and lungs.

The variability of the effects produced by eating mushrooms or toadstools raises a number of very interesting questions, the consideration of which from any point of view increases the sense of responsibility attendant upon recommending almost any of these plants as articles of diet to the uninitiated.

LONDON, ONTARIO,
CANADA.